ILLINOIS ENVIRONMENTAL PROTECTION AGENCY MEMORANDUM

DATE: November 29, 1984

TO: Division File

FROM: Craig Liska

SUBJECT: 0316550004 - Cook County - Chicago/PVS Chemical Inc.
ILD 001833714

On November 29, 1984, I conducted an inspection of the subject site for determining their degree of compliance with Groundwater Monitoring requirements under 35 Illinois Administrative Code (35 Ill. Adm. Code) Part 725 Regulations, Subpart F. This inspection is also to serve as a follow-up to the August 24, 1984 inspection performed by USEPA contractor, Harding Lawson Associates. Dale Smyser, Plant Manager and John Hora, both of PVS Chemical were present at the time of my inspection.

Background -- Allied Chemical Operations

PVS Chemicals Inc. is a subisdiary of Pressure Vessel Service Inc. The PVS Chicago operation manufactures basic chemicals including sulfuric acid, aluminum chloride, ammonium thiosulfate, oleum and sulfan.

The facility was previously owned by Allied Chemical Corporation and was sold to PVS Chemicals on October 13, 1981. Allied Chemical had filed a Part A Permit Application on November 14, 1980. The application included a two-compartment surface impoundment which received an aqueous waste stream with a pH of less than 2. Mr. Smyser stated that pH was the only characteristic that caused the waste stream to be distinguished as a hazardous waste D002. The hazardous waste was stored in the southern compartment of the Allied impoundment prior to treatment. Treatment occurred by pumping the waste from the southern compartment into the two wastewater treatment tanks where soda ash was introduced. The wastewater treatment tanks were situated in a building approximately 300 feet north of the impoundment. The building and tanks are still in existence; however, they are no longer in use. Allied Chemical utilized two treatment tanks for a two stage neutralization process prior to pumping the waste into the northern compartment of the surface impoundment. Iron oxide and other solids would precipitate out of solution in the northern compartment and the remaining fluid would be discharged to the Metropolitan Sanitary District of Greater Chicago. Both compartments of the surface impoundment consist of above grade earthen dikes that are covered with five layers of burlap with a tar coating. The Allied Chemical two compartment surface impoundment listed on their Part A application was subject

to Subpart F, Ground-water Monitoring requirements. Allied Chemical has not monitored the groundwater. Allied Chemical nor PVS Chemical have closed the surface impoundment according to the RCRA closure requirements.

PVS Chemical Current Operations

PVS Chemical purchased the Chicago plant from Allied Chemical on October 13, 1981. PVS notified the USEPA in a letter of the change of ownership. On June 12, 1982, PVS submitted a notification of hazardous waste activity form stating that they are a generator of hazardous waste. The notification form indicates that the facility generates the following hazardous wastes: Ignitiable (D001), Corrosive (D002), Reactive (D003), Toxic (D004), Asbestos (U013), Methylethylketone (U159) and Xylene (U239). Mr. Smyser, Plant Manager stated that the notification form was completed by his predecessor, Robert Herzberger. He explained tht the facility does not generate any of those wastes with the exception of MEK in quantities averaging two gallons every six months. The MEK is disposed of long before the accumulation of 1,000 kg. Mr. Smyser could not explain the lisintgs on the notification form.

PVS Chemicals generates four individual waste streams all of which are characterized as non-hazardous: 1) Permit #781482 Iron Hydroxide Sludge; 2) Permit #791883 Hypo Filter Sludge; 3) Permit #792851 Aluminum Chloride Waste Residue; and 4) Waste Oil that is sold to a reclaimer. PVS also maintains permits for two waste streams characterized as hazardous: 1) Permit #820346 Mixed Sulfuric Acid/Soda Ash and 2) Permit #920619 Chromium Sulfate Solution Residue.

Permit #781482 - Iron Hydroxide Sludge

The iron hydroxide sludge is a non-hazardous sludge that is generated from the treatment of wastewater in the two compartment surface impoundment. PVS Chemical made several process changes following their acquisition from Allied Chemical. These process changes with respect to the impoundment will be discussed later in this report. PVS Chemical essentially ceased the intoroduction of hazardous waste into the impoundment. Allied Chemical had the sludges removed from the impoundment quite frequently, primarily due to the volume of solids generated from their tanker car cleaning operation. PVS Chemical's operations do not include tanker car cleaning; consequently, a much smaller volume of sludge is generated. PVS Chemical had the sludge removed from the impoundment only once since purchasing the facility in October 1981. The sludges were pumped in 1982 and disposed of as a non-nazardous waste at C.I.D. Landfill.

Permit #791883 - Hypo Filter Sludge

The hypo filter sludge is a non-hazardous sludge that is generated from the production of Ammonia Thiosulfate. Wastewater from the Ammonia Thiosulfate process is directed into an underground concrete tank where the solids settle out. The non-hazardous wastewater, having a pH of 7.5 to 8.5, is then discharged to the Metropolitan Sanitary District of Greater Chicago. The non-hazardous sludges are periodically pumped from the 4,000 gallon concrete tank and disposed of at C.I.D. Landfill.

Permit #792851 - Aluminum Chloride Waste Residue

The aluminum chloride waste residue is generated in the manufacturing process of aluminum chloride. More specifically, the waste is generated from rinisng the process filter. The rinsate is pumped from the base of the filter housing into an above ground, 7 cubic yard concrete tank. The rinsate, having a pH of 1.5, is neutralized by adding soda ash into the concrete tank. The soda ash brings the pH of the wastewater up to approximately 5. The concrete tank is pumped approximately twice every year. The waste is determined to be non-hazardous and is disposed of at C.I.D. Landfill.

Permit #822564 - Mixed Sulfuric Acid/Soda Ash

This permit was applied for in the case that a spill should occurr and where it would be necessary that contaminated soil be disposed of. PVS Chemical fabricated a phoney spill for the analysis requirements of obtaining a permit. PVS Chemical has not had a spill that required the use of this permit. They intend to let the permit expire and utilize an emergency permit should a spill occurr in the future.

Permit #920619 - Chromium Sulfate Solution Residue

The chromium sulfate solution residue was generated from the production of chromium sulfate. PVS Chemical no longer manufactures chromium sulfate and intends to allow the permit to expire.

Two Compartment Surface Impoundment

PVS Chemical currently utilizes the surface impoundment in such a manner that only non-hazardous wastes enter the pond. Unlike the Allied Chemical operation, PVS Chemical raises the pH of the wastewater in a tank prior to discharging into the impoundment. Wastewater having a pH of less then 2 enters the treatment tank where magnesium hydroxide is introduced. The magnesium hydroxide is added until the wastewater attains a pH of approximately 4. The wastewater is at that time pumped into the southern compartment of the impoundment. Magnesium hydroxide is used again to increase the pH of the wastewater in the southern compartment to a level of 8. At this point the wastewater is pumped into the northern compartment of the impoundment where the iron hydroxide begins to precipitate out of solution and settle on the pond bottom. The iron hydroxide sludge is periodically pumped out and disposed of at C.I.D. while the wastewater is discharged to the sanitary sewer via a permit with the Metropolitan Sanitary District of Greater Chicago. Mr. Smyser stated that PVS Chemical perfers to use magnesium hydroxide for neutralization primarily due to its' stability. Apparently, pH adjustments are more easily controlled using magnesium hydroxide rather than soda ash. Another advantage of using magnesium hydroxide is that regardless of the amount intoroduced into the wastewater, the pH will never exceed 9. The treatment process also utilizes strip charts to monitor the pH in the treatment tank.

While viewing the strip charts, I noticed that the current pH in the treatment tank was 10. Knowing that magnesium hydroxide could not raise the pH past 9, I asked Mr. Smyser how the pH attained the level of 10. Mr. Smyser stated that this has never occurred in the past and that he was puzzled as to the cause. He believed that perhaps an employee had discharged some soda ash into the wastewater by mistake. He also stated that he would continue to look into the matter. I informed Mr. Smyser that the wastewater would be classified as hazardous if the pH climbs to a level of 12 and that he should monitor the situation closely.

Conclusions

By November, 1981, PVS Chemical completed process modifications which raised the pH of the wastewater entering the surface impoundment to a level above 2. PVS personnel maintain that the waste stream that entered the impoundment prior to November, 1981, was hazardous based only on the criteria of a corrosive waste. Consequently, only non-hazardous wastes are entering the pond currently.

Neither Allied Chemicals nor PVS Chemicals closed the surface impoundment according to RCRA. Consequently, PVS Chemical is operating a "hazardous waste storage surface impoundment" even though the current waste stream is non-hazardous. PVS Chemical has not complied with the Subpart F, Groundwater monitoring requirements by installing a groundwater monitoring system. I presented three options for Mr. Smyser to bring his facility into compliance: 1) Install a groundwater monitoring system that complies with Subpart F requirements; 2) Apply for a waiver as defined under Subpart F, Section 725.190(e) demonstrating that corrosive wastes that entered the pond were neutralized to the extent that they no longer met the corrosivity characteristic before they could have migrated out of the impoundment; and 3) Close the surface impoundment in accordance with Subparts G & K. Mr. Smyser seemed receptive to the closure option.

CJL:gec/Doc.#0098A

cc: Northern Region
Mark Haney
CJL